Note on the Variable Star U *Orionis.*
By Lieut.-Col. E. E. Markwick.

Up to date of writing, observations of this star have been secured at Gibraltar this season on thirty-three nights, commencing January 7 and ending April 3. They were made, as in former years, with a binocular magnifying five times. I have never been able in past years to get so many observations and so close together, about the time of maximum. The maximum, therefore, so far as my own observations go, can, I think, be allocated with considerable confidence to 1894 February 8. I base this determination on three observations, as follows :

Feb. 6	$6^{m} \cdot 07$	
9	$6^{m} \cdot 27$	In the Harvard Scale, as nearly as possible.
10	$6^{m} \cdot 07$	

On no other occasion was the star so bright as on February 6 and 10 ; hence the mean gives fairly enough the date of maximum—viz. February 8.

A maximum was observed by me about 1892 January 23 (see p. 604, vol. lii.). From this date to that of maximum in 1894 there are 747 days. As this corresponds to two periods, it gives as the mean period for those two years $373 \cdot 5$ days. This coincides practically with the period found by Gore on p. 518, vol. l., viz. $373 \cdot 47$ days.

Also, if we take the period elapsed from 1886 December 12 (the first well-determined maximum) to 1894 February 8, we get 2,615 days, corresponding to seven complete periods. This gives as a mean period $373 \cdot 57$ days.

It may therefore be taken that, so far as our observations go at present, we cannot much better the $373 \cdot 47$ days' period for U *Orionis.*

The difference between observation and computation is shown in the following table. The first column (C_1) gives the dates of maxima in the years named, based on Dr. Chandler's period of 371 days ; the second (C_2) the same on Mr. Gore's period of $373 \cdot 47$ days. The third column (O) gives the observed maxima, which are the means of all those published ones I have been able to collect—viz. by Gore, Sawyer, Yendell, Parkhurst, Dunér, and Markwick. There are only two determinations for 1893, and they have been kindly furnished to me by Mr. Gore. They are by himself and Mr. Corder, and both give February 4 a date of maximum.

It will be seen that the residuals with the 371 day period come out large and gradually increase, while those of the $373 \cdot 47$ day period are much smaller.

Computed Maximum.		Observed	$O-C_1$	$O-C_2$
371 Days (C_1).	373·47 Days (C_2).	Maximum (O).	Days.	Days.
1886 Dec. 13	Dec. 12	Dec. 12	− 1	0
1887 Dec. 19	Dec. 20	Dec. 20	+ 1	0
1888 Dec. 24	Dec. 27	Dec. 29	+ 5	+2
1889 Dec. 30	Jan. 5	Jan. 9	+10	+4
1891 Jan. 5	Jan. 13	Jan. 19	+14	+6
1892 Jan. 11	Jan. 22	Jan. 29	+18	+7
1893 Jan. 16	Jan. 29	Feb. 4	+19	+6
1894 Jan. 22	Feb. 7	Feb. 8	+17	+1

There seem to be indications of an inequality in the period from both series of observations. Dr. Chandler, in his elaborate *Second Catalogue of Variable Stars*, notes "periodic inequality" against this star, although the terms have not yet been determined. He points out that inequalities in the variation of long-period variables are in general periodic, running through cycles of fifty or sixty periods on the average, sometimes of only twenty or thirty periods. It is hence pretty evident that we shall require a series of observations of this star extending over a considerable number of years before the period can be properly thrashed out.

I have prepared curves showing the variation in brightness for six seasons, dealing with it when higher than the 9th magnitude. They all show a pretty rapid rise to maximum, and a comparatively gradual declension subsequently. Also curious small fluctuations of light at times, especially when close to the maximum. In fact, the light curve bears a remarkable similarity to that of *Mira Ceti*, except that the rise to maximum of the latter star does not seem quite so sharp.

Gibraltar :
    1894 *April* 16.

On the Semi-Annual Variation of Meteors.
By George C. Bompas.

(*Communicated by A. Cowper Ranyard.*)

In 1857 I addressed a paper to the Royal Astronomical Society on the horary variation of shooting stars (*Monthly Notices*, vol. xvii. p. 148).

According to the observations of M. Coulvier Gravier (*Recherches sur les Etoiles Filantes*, Paris, 1845 ; *Recherches sur les Météores*, Paris, 1859) and of other astronomers, the

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